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NEW AND RARE SPHECIDAE (HYMENOPTERA) FROM WEST AFRICA

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Eight new species of Sphecidae from Senegal, Côte d'Ivoire, Nigeria, and Niger are described: *Liris (Leptolarra) rufula* sp. n., *L. (Leptolarra) senegalensis* sp. n., *Nitela (s.s.) miekae* sp. n., *Miscophus rufigaster* sp. n., *M. senegalensis* sp. n., *M. wieringi* sp. n., *M. eburneus* sp. n., and *M. pseudochrysis* sp. n. In addition a description is presented of the unknown female *Miscophus sallitus* Andrade.

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Key words. – Hymenoptera, Sphecidae, West Africa, new species.

The Sphecidae were obtained during a research program in northern Senegal on the effects of chemical locust and grasshopper control on other insects. The area in which the research was executed was homogenous savannah with sparse trees and shrubs (Everts 1990). Collecting was carried out on seven plots (A-G), each with five malaise traps (1-5). The plots, 2 x 2 and 2 x 3 km, were situated 25-35 km south east of Richard Toll (fig. 1). The insects in the malaise traps were collected once a week, five times before and five times after spraying. Plot C, for reference, was not sprayed.

By counting the number of different insect species or groups before and after spraying the effect of the insecticides could be measured (Evers 1990). This paper describes new species of Sphecidae found in the material.

Through the courtesy of J. W. Evers and K. W. R. Zwart (LUW) I also had the opportunity of studying other Sphecidae from Côte d'Ivoire, Nigeria, and Niger, which are described here too.

Abbreviations of depositories

ZMAN, Institute for Systematics and Population Biology (Zoological Museum), University of Amsterdam, The Netherlands ; LUW, Laboratory of Entomology, University of Wageningen, The Netherlands; RMNH, National Museum of Natural History (formerly: Rijksmuseum van Natuurlijke Historie), Leiden, The Netherlands.

Abbreviations and symbols

Ocellar measurements (after Andrade 1960): POL - Distance between the posterior ocelli; OOL -Distance between a posterior ocellus and the corresponding eye; SOL -Distance between the anterior ocellus and a posterior one; VOL -Distance between a posterior ocellus and an imaginary line interconnecting the posterior corners of the eyes (fig. 2). The microsculpture terms used in this paper are after Eady (1968).

SYSTEMATIC PART

Liris Fabricius, 1804

This is a large cosmopolitan genus comprising over 260 species, for the greater part found in the tropics. About 70 species are found in the Ethiopian Region. Both described species can be assigned to the subgenus *Leptolarra* Cameron, 1900, by having a transverse row of stout setae on the apex of the pygidial plate, the surface of pygidium covered with appressed hairs, and claws untoothed.

Liris (Leptolarra) rufula sp. n.
(fig. 3)

Type material. – Holotype female: Senegal, 25-35 km sud de Richard Toll, piège malaise E1, 10. viii.1989, leg. H. v. d. Valk c.s. (LUW). – Paratypes: same locality and collector as holotype, piège malaise F2, 1♀ 23.ix.1989, piège malaise A3, 1♂ 19.-viii.1989 (LUW); piège malaise C2, 1♀ 8.viii.1989, piège malaise C3, 1♂ 20.ix.1989 (ZMAN); piège malaise C3, 1♀ 13.ix.1989 (RMNH).

Description

Female 17 mm. Black; shining apical part of clypeus ferruginous. Palpi yellow ferruginous. Mandible

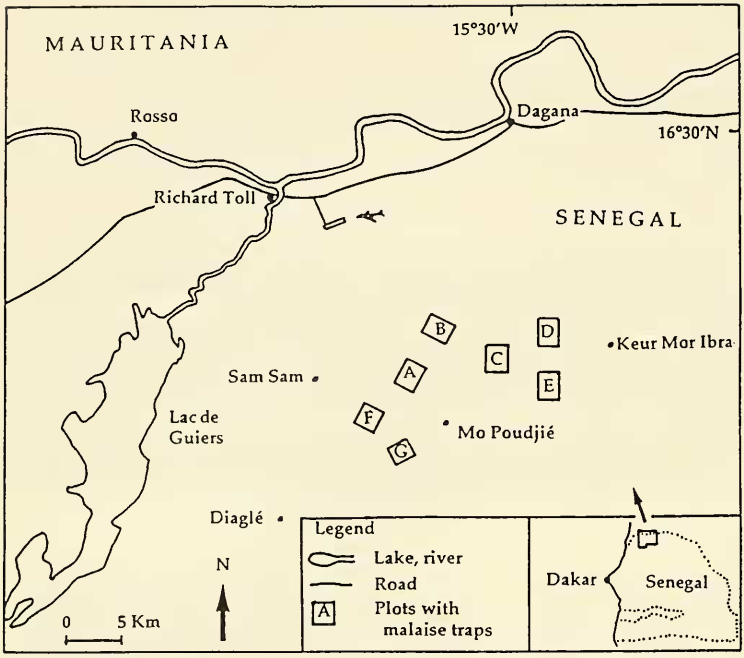


Fig. 1. Map of Senegal, the plots in the research area are indicated.

ferruginous with dark brown apex. Scape, pronotal lobe, tegula, and propodeal spiracle ferruginous. Pedicel and flagellomeres I-VIII blackish brown with ferruginous apical ring. Gaster bright ferruginous.

Apical margin of clypeus faintly undulated. Mandible monodont with broad, deep emargination on externoventral margin. Clypeus with central longitudinal shining spot and shining rim along apex. Clypeus two and a half times wider than long. All flagellomeres three times as long as wide at apex. Flagellomere X not flattened. Vertex dull with fine points. Frons and genae with silvery pubescence. Eyes with scattered erect hairs. Inner eye margins converge to vertex (from 40 to 17). Midocellus round.

Pronotum with scarce silvery pubescence, sides of pronotum faintly obliquely striated. Mesonotum, scutellum, and metanotum shining with very fine points. Propodeum wider at the base than long (53 : 43). Dorsum and posterior face of propodeum with strong transversal striation. Propodeum with some pubescence along lateral sides. Side of propodeum with oblique striation.

Gaster with very short silvery pubescence. Pygidium narrow, shining, with large points, points separated from each other by twice their own diameter. Pygidial plate a little more than twice as long as wide, ending

Table 1. Differences in colour and characteristics of the females of the species *Liris (Leptolarra) rufula* sp. n., *L. (Leptolarra) senegalensis* sp. n. and *L. (Leptolarra) croesus* (F. Smith).

	L. (L.) rufula sp. n.	*L. (L.) senegalensis* sp. n.	*L. (L.) croesus* (F. Smith)
Scape	ferruginous	ferruginous	black
Antennae	blackish brown	partly black, partly ferruginous	black
Flagellomere X	round	flat	round
Pronotal lobe	brown, no pubescence	brown with silver pubescence	black, no pubescence
Mesonotum	dull and finely punctulated	with goldish pubescence	with goldish pubescence
Lateral part of propodeum	strigose with silvery pubescence	strigose with silvery pubescence	punctulated without pubescence, short ridges along edges
Gaster	bright ferruginous	dark ferruginous	black
Pygidial plate	narrow (38 : 17)	broad (37 : 26)	broad (38 : 28)
Apex of pygidium	6 satae in one row	10 satae in 2 rows	6 satae in one row
Body	slender	slender	robust

blunt with a row of five stout setae at apex (fig. 3), with some short reclining hairs and a few upright thin hairs.

Wings hyaline with ferruginous veins. Apex of forewing beyond the nervation softly fumigated. Hindwing hyaline.

Legs including coxae ferruginous. Spines of tibiae II and III black.

Claws untoothed; spines of tarses I dark brown and pointed at top. Metatarse I with five spines, last spine not longer than next tarsus. Largest spine of tibia III 0.6 length of metatarse III.

No difference in structure or colour of holotype and paratypes was found; the sizes of the paratypes are 15 and 10 mm. The number of setae at apex of pygidium varies from 5 to 3.

Male 8-9 mm. Colour and structure largely the same as in holotype. On exterior side of flagellum a low carina runs from flagellomeres III-X. No difference in structure or colour in second male.

Etymology. – The name of the species refers to its remarkable reddish coloration of gaster and legs.

Comparative notes. – See under *L. (Leptolarra) senegalensis* sp. n.

Liris (Leptotarra) senegalensis sp. n.
(fig. 4)

Type material. – Holotype female, Senegal, 25-35 km sud de Richard Toll, piège malaise E1, 2.ix.1989, leg. H. v. d. Valk c.s. (LUW). – Paratypes: same locality and collector as holotype; piège malaise C3, 1♀ 28.viii.1989 (LUW); piège malaise G1, 1♀ 16.ix.1989, piège malaise G2, 1♀ 16.ix.1989 (ZMAN); piège malaise G3, 1♀ 23.ix.1989 (RMNH).

Description

Female 17 mm. Black; mandibles ferruginous with apical 0.4 black. Palpi, clypeus, scape, pedicel, and flagellomere I ferruginous. Flagellomere II ferruginous with black stripe externally. Flagellomeres III-X internally ferruginous, externally blackish. Genae and vertex with short silvery pubescence. Gaster dark ferruginous, apical halves of tergites with very short silvery pubescence.

Apical margin of median lobe of clypeus shining and broadly arched. Clypeus nearly two and a half times as wide as long (48 : 19). Head dull with tiny points and some depressed white hairs. Frons and genae with silvery pubescence covering the underlying structure. Flagellomere I three times as long as wide at apex. Flagellomeres III-IV two times as long as wide at apex. Flagellomeres V-IX one and a half times as long as wide at apex. Flagellomere X externally flattened. Eyes with scattered erect hairs. Inner eye margins converge to vertex (from 43 to 16). Mandible monodont with broad deep emargination on externoventral margin.

Pronotum with scarce silvery pubescence, apical half of pronotal lobe ferruginous with rounded top. Thorax with light yellow pubescence, shining, with tiny points. Propodeum dull with fine granulation. Side of propodeum with oblique striation.

Sternites II-V with a few long apical setae. Pygidium wide, 1.3 times as long as wide at the base (fig. 4). Dorsal side of pygidium punctulated covered with short depressed goldish hairs. Apical rim rounded with ten setae in two rows.

Forewing yellowish with yellow veins. Apical part beyond first transverse submarginal vein grey with brown veins. Hindwing yellowish with yellow veins.

All legs including coxae ferruginous. Claws untoothed, apical half black. Spines of tibiae II and III black. Largest spine of tibia III as long as metatarse III. Spines of frontleg ferruginous. Metatarse I with five spatulated spines; apical spine nearly 0.4 longer than next tarsus. All pecten of the tarsi longer than next tarsus.

The paratypes do not differ in structure or colour. Their sizes are between 14 and 15 mm. The apical setae of the pygidium range from 7-12.

Male unknown.

Etymology. – The species is named after the country in which the material was found (Senegal).

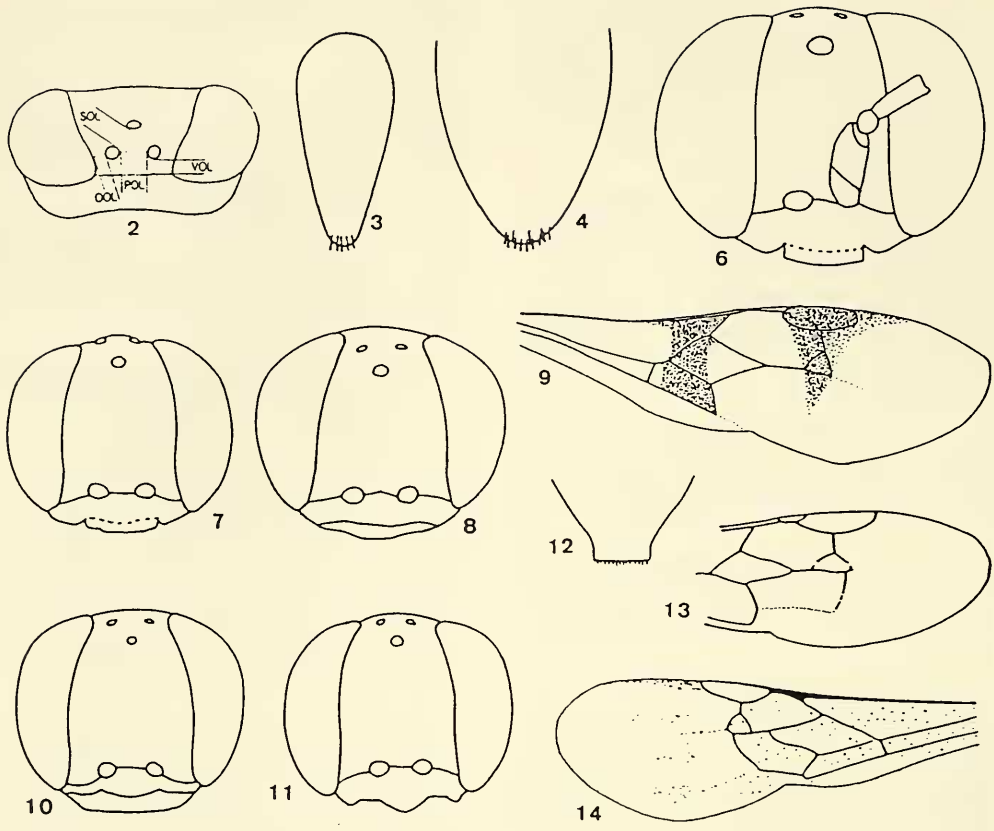
Comparative notes. – Although *Liris (Leptolarra) rufula* sp. n. and *L. (Leptolarra) senegalensis* sp. n. are much alike. *L. senegalensis* resembles in structure and colour *L. (Leptolarra) croesus* (F. Smith), the first species being slender in general appearance and the second species more robust. *L. rufula* differs from all the other species of *Liris (Leptolarra)* in having a bright ferruginous gaster and legs. The light coloration could be an adaption to strong solar radiation and reflection from the sandy soil (Lomholdt 1985). The differences of the three species are summarized in table 1.

Nitela Latreille, 1809

Nitela is a cosmopolitian genus. The Ethiopian Region has the largest share of the 43 species. The subgenus *Nitela* is mostly found in the Old World and Australia. The described species belong to the subgenus *Nitela* Latreille in having bare eyes and frontoclypeal carine absent or if present not lamelliform.

Nitela (s.s.) miekae sp. n.

Type material. – Holotype female, Senegal,



Figs. 2-4, 6-14: 2, dorsal view of head of *Myscophus*, showing the ocellar measurements; 3, *Liris rufula* sp. n., female, pygidium; 4, *Liris senegalensis* sp. n., female, pygidium; 6, *Miscophus rufigaster* sp. n., female, head, anterior view; 7, *Miscophus senegalensis* sp. n., female, head, anterior view; 8-9, *Miscophus wieringi* sp. n., female - 8, head, anterior view; 9, forewing; 10-12, *Miscophus eburneus* sp. n. – 10, female, head, anterior view; 11, male, head anterior view; 12, sternite VII, ventral view; 13, *Miscophus pseudochrysis* sp. n., female forewing; 14, *Miscophus sallitus* Andrade, female, forewing.

Ziguinchor, 13.v.1983, mangrove, J. W. Everts (ZMAN). – Paratypes 1 ♂ 1♀, same data as in holotype (ZMAN).

Description

Female 4 mm. Black; tegula dark ferruginous. First and basal half of second segment of labial palpi dark brown, apical half of second segment and the next two segments light brown. First two and basal half of the third segment of the maxillary palpi dark brown, apical half of third segment and the next three segments light brown. Mandibles basal third black, apical two third ferruginous. Antennae black, flagellomeres III-X ventrally with dense short bluish white pubescence.

All segments of the palpi with some hairs at the apical end of the segments. Clypeus wider than high (17 : 7), bulging in the middle with narrow and high midcarina. Clypeus and ventral half of frons with dense silvery pubescence covering underlying structure. Dorsal part of frons and vertex finely rugose. Interocular distance across base of clypeus nearly twice as wide as across vertex. POL : OOL = 3.5, SOL : OOL = 2.5, VOL : OOL = 2.0. Along interocular rim of the compound eyes a line of white scales. Pedicel length 0.6 of width. Flagellomeres I and II 1.6 times as long as wide. Flagellomeres III-VI 1.4 times as long as wide. Flagellomeres VII-X 1.2 times as long as wide. Flagellomeres X somewhat dorso-ventrally flattened.

Dorsal side of pronotum separated from front side by a transversal carina showing a triangle in the middle. Mesonotum transversally finely strigose, punctulated in between. Mesonotum separated from scutel-

Fig. 5. Distribution of the *Miscophus bicolor* species group in the Ethiopian and west Eurasian regions (Lomholdt 1985) and the species described in this paper. – ★ *M. rufigaster* sp. n., ● *M. senegalensis* sp. n., ▲ *M. wieringi* sp. n., ■ *M. eburneus* sp. n., ♦ *M. pseudochrysis* sp. n., ▼ *M. sallitus* Andrade, + *M. funebris* Honoré.

lum by a crenulated furrow. Scutellum and metanotum finely reticulated. Mesopleura strongly rugose with a glabre, shining hypoepimeral area. Episternal sulcus and hypersternaulus strongly developed. Metapleura and sides of propodeum with longitudinal strigose. Dorsal side of propodeum strongly reticulate rugose, propodeal enclosure separated from vertical sides by a carina. Ventral side of thorax with scattered white hairs.

Tergites and sternites I-V black with apical ferruginous rim, tergite VI black without pygidium. Tergite I nearly twice as wide as long on the dorsal surface. Apex of sternites with some white hairs.

Wings hyaline with light brown veins and stigma.

All tibiae black with apical and basal brown rings. All femurs black with apical brown rings. All tarsi brown.

Male 4 mm. Colour and most of the structure as in holotype. Apex of scutellum five longitudinal crenulate.

Etymology. – I am pleased to name this species after my wife Miek, who has helpfully assisted me in the field and in preparing the manuscript.

Comparative notes. – *Nitela (s.s.) miekae* sp. n. is the first species of this genus collected in West Africa, resembling very much *N.* (s.s.) *mochii* Arnold (1940), which was collected at Wadi Hoff, 60 km south of Cairo, Egypt. The differences in characteristics of both species are given in table 2.

Miscophus Jurine, 1807
(fig. 5)

Miscophus is represented by about 150 species in all regions except Australia. Most species are found in the Old World, especially the Mediterranean area. Up till now no *Miscophus* species were found in West Africa south of Spanish Sahara (20° N) (Lomholdt 1985). All species described below belong to the *bicolor* species group. The *bicolor* species group holds small species, rarely more than 6 mm long; genae mostly without erect whitish pilosity; apex of fifth sternite in the females without a complex of very shallow large rough puncturation (Andrade 1960).

Fig. 5 shows the known distribution of the *bicolor* species group (after Lomholdt 1985) as well as the collecting places of the new species in West Africa.

The *Miscophus* species are distinctive sanddwellers (Honoré 1944). They are found along the desert, but also around 'wadis'. Mostly found in spring (March–June) on the hottest part of the day on the sand or around the stems of desert plants. Nest in the soil. Spider catchers.

Table 2. Differences in characteristics of the species *Nitela (s.s.) mochii* Arnold and *N. (s.s.) miekae* sp. n.

	Nitela (s.s.) mochii Arnold	*Nitela (s.s.) miekae* sp. n.
Clypeus and lower part of face	pubescence scarce and silvery	pubescence dense and silvery covering underlying structure
Frons	closely punctulated	finely rugose
Mesonotum	punctulated	transversal finely strigose
Proportinal length of pedicel and flagello-meres I and II	4 : 5 : 5	4 : 4 : 5
Tergite I	nearly three times as wide as long	twice as wide as long

Miscophus rufigaster sp. n.
(fig. 6)

Type material. – Holotype female, Côte d'Ivoire, 30-35 km N.Korghogo, mal. tr. 38, 10.iii.1980, J. W. Everts (ZMAN). – Paratypes 1 ♀, same data as holotype (ZMAN); 1 ♀, same place and collector, mal. tr. 25, 17.iv.1980 (LUW).

Additional specimens. – 1 ♀, Côte d'Ivoire, Katiola-Coton, 13.xi.1980, mal. tr., J. W. Everts (RMNH); 1 ♀, same place and collector, malaise, 20.iii.1981 (ZMAN).

Description

Female 7 mm. Black; mandibles ferruginous with red brown apex after a black ring. Apex of subbasal notch of mandible red brown. Scape, pedicel, and gaster light ferruginous. Palpi dark greyish.

All segments of palpi with outstanding hairs. Inner margins of compound eyes mostly parallel, at vertex somewhat converging and near clypeus diverging (fig. 6). Median lobe of clypeus bulged, convex with smooth and shining rim, rest of clypeus with long silvery hairs and punctulated. Frons with scarce silvery pubescence. Apex of scape ending in sloping top; the 0.6 distal internal part of the scape with a shining translucent area (fig. 6). Pedicel somewhat wider than long. Flagellomeres I-III three times as long as wide at apex, flagellomeres IV-X twice as long as wide at base. Vertex finely and closely punctulated, bulging between the ocelli. POL : OOL = 1.5, SOL : OOL = 1.9, VOL : OOL = 1.3.

Pronotum, mesonotum, scutellum, and metanotum finely and closely punctulated. Metanotum with lateral oblique silver pubescens, directed outwards. Dorsal part of propodeum somewhat longer than wide (15 : 20) with minute, oblique strigose and clear longitudinal midcarina. Posterior face of propodeum rather abruptly cut, forming an angle of about 100 degrees with its dorsum, horizontal striated.

Sixth tergite sharply pointed apically, without pygidium. Sternites II-VI each with two apical outstanding hairs.

Forewing hyaline, somewhat clouded beyond the nervation. First recurrent vein received by the first submarginal cell, close to submarginal II, second recurrent vein received by submarginal cell II near the apical end. Hindwing hyaline, media diverging beyond cu-a. Jugal lobe round and small with a very deep incision.

Legs ferruginous; external side of the femora somewhat darker; coxae black. Tarsi apically brown. Metatarsus I with two lateral spines. The apical spines of metatarsus and first tarsus twice as long as the next tarsus. The apical spine of second tarsus one third longer than the third tarsus.

Male unknown.

Etymology. – From Latin rufo, meaning red, and gaster, referring to all segments behind the propodeum.

Variation. – One female, Côte d'Ivoire, Katiola-Coton, malaise, 20.iii.1981, leg. J. W. Everts, differs somewhat from the type in having the last three tergites and sternites dark brown and the forewing tip white.

Comparative notes. – *Miscophus rufigaster* sp. n. and *M. funebris* Honoré (1944) are much alike. The differences in colour and characteristics of both species are given in table 3.

Miscophus senegalensis sp. n.
(fig. 7)

Type material. – Holotype female, Senegal, Ziguinchor, 13.v.1983, malaise, mangrove, J. W. Everts (ZMAN).

Description

Female 4.5 mm. Black; palpi ferruginous; mandibles dark ferruginous, black ring before amber red ap-

Table 3. Differences in colour and characteristics of the females of the species *Miscophus rufigaster* sp. n. and *M. funebris* Honoré.

	M. rufigaster sp. n.	*M. funebris* Honoré
Legs	excluding coxae ferruginous	black
Last three gastral segments	light ferruginous	dark brown
Clypeus	mostly shining without pubescence	silvery pubescence
Pedicel	somewhat wider than long	somewhat longer than wide
Flagellomeres I-III	3 times as long as wide	2.1 times as long as wide
SOL : OOL	1.9	2.0
VOL : OOL	1.3	1.0
Dorsal part of propodeum	obliquely strigose	closely punctulated
Forewing	hyaline, clouded beyond nervation	basal part somewhat clouded; hyaline over discoidal and submarginal cell, clouded beyond nervation with white wing tip

ex, black base; apex of median lobe of clypeus brown; pedicel and first three flagellomeres light ferruginous. Scape ventrally ferruginous and dorsally dark brown.

Palpi with scarce short pubescence. Clypeus and lower part of frons with scarce white pubescence directed apically. Medium lobe of clypeus smooth and slightly bulging with a few large points. Apical rim of medium lobe of clypeus smooth, no punctation, separated from basal part by a crenulated furrow (fig. 7). Head with close and very fine punctulation. Inner margins of compound eyes curved, near clypeus and at vertex converging (17 : 20 : 13). Pedicel 0.9 of the length of flagellomere I and as long as flagellomere II. Flagellomeres II-VIII twice as long as wide. Flagellomeres IX and X somewhat shorter. Flagellomere X conical. POL : OOL = 3.0, SOL : OOL = 2.0, VOL : OOL = 0.4.

Pronotal collar rather developed, transition to the anterior declinity relatively sharp and well defined. Mesonotum, scutellum, and metanotum very closely and finely punctulated. Propodeum equally long and wide at the base, very finely and obliquely strigose and with longitudinal midcarina. Propodeum with short silvery forwardly depressed pubescence. Side of propodeum obliquely strigose. Mesopleuron and metapleuron shining and finely punctulated. Posterior face of propodeum rather abruptly cut, forming an angle of about 100 degrees with its dorsum.

Apical rim of tergites dark brown. Tergites and sternites very finely punctulated. Tergite VI rounded apically without pygidium.

Wings hyaline. Veins along front edge of forewing dark brown. Other veins light ferruginous. 1m-cu entering submarginal cell I at a distance from submarginal cell II equal to the length of M2. Cu1 and 2m-cu not reduced. Jugal lobe round and small equally long and wide with very deep incision.

Inner side of tibia I, whole tibia II, and tarsi brown. Other parts of the legs black. Hind tibia with two apical spines, one spine as long as 0.7 of metatarse III.

Male unknown.

Etymology. – The species is named after the country in which the type was collected (Senegal).

Comparative notes. – *M. senegalensis* belongs to the *aenigma* species subgroup within the *bicolor* species group. The species resembles *M. nevesi* Andrade, 1952 from Portugal. The differences are found in the size of the body and the structure of the head. The clypeus of *M. senegalensis* is more pointed; the dorsal view of the head shows a much wider size behind the eyes; POL : OOL = 3.0 and SOL : OOL = 2.0 in *M. senegalensis* and POL : OOL = 1.8 and SOL : OOL = 1.4 in *M. nevesi*. The inner corners of the compound eyes at the vertex are nearly right-angled in *M. senegalensis* and rounded in *M. nevesi*. The ocelli are placed more posteriorly, VOL : OOL = 0.4 in *M. senegalensis* and 1.0 in *M. nevesi*. Posterior face of propodeum has a different cut, forming an angle with its dorsum of about 130° in *M. nevesi* and 100° in *M. senegalensis*.

Miscophus wieringi sp. n.
(figs. 8, 9)

Type material. – Holotype female, Senegal, 25-35 km sud de Richard Toll, piège malaise D3, 31. viii.1989, leg. H. v. d. Valk (LUW). – Paratype 1♀, same place and collector as holotype, piège malaise C3, 13.ix.1989 (ZMAN).

Description

Female 7 mm. Head black; palpi creamy white, mandibles ferruginous, apex red, apex of subbasal notch red. Scape, pedicel, and clypeus light ferruginous; flagellomeres I and II ventrally ferruginous dorsally brown, other flagellomeres ventrally brown and dorsally dark brown. Pronotum, pronotal lobe, and tegula ferruginous. Gaster light ferruginous.

External side of palpi with erect hairs. Clypeus arched with rounded middle part. Clypeus narrow (19 : 5) with broad translucent ferruginous rim with some long hairs (fig. 8). Apex of scape ending in sloping top (compare with fig. 6). Distance between compound eyes at vertex half the distance just above clypeus. POL : OOL = 3.2, SOL : OOL = 4.0, VOL : OOL = 2.5. Frons and clypeus with short and scarce goldish pubescence covering the fine punctulation. Flagellomere I two and a half times as long as wide. Flagellomeres II and III twice as long as wide; flagellomeres IV-X somewhat shorter. Flagellomere X conical.

Pronotum rather long, collar half as long as wide, lateral rounded. Collar finely and longitudinally strigose. Mesonotum, scutellum, and metanotum with short goldish pubescence and very closely punctulated. Mesopleuron strigose. Propodeum without pubescence, shining, equally long and wide at the base, lateral front part obliquely striated, middle apical part very finely almost transversally striated, with rather high midcarina. Angle between dorsum of propodeum and hindslope about 100 degrees. Upper part of mesopleuron with some goldish pubescence. Lower part of the mesopleuron and mesosternum with silvery pubescence.

Gaster shining, with few small points. Tergites II-IV translucent. Apex of tergite VI sharp, without pygidium.

Forewing (fig. 9) hyaline with two clouded bands, one just in front of submarginal cell I and the other just over the marginal cell and submarginal cell II.

Zone between the two clouded bands milky white with white veins. Other veins light brown. Forewing with petiole of submarginal cell II as long as height of this cell. Cu1 and 2m-cu reduced. Jugal lobe round and very small with deep incision.

All legs including coxa light ferruginous with brown spines. Coxa I ventrally translucent and equally long and wide at the base.

Male unknown.

Etymology. – I am very pleased to name this species after my friend H. Wiering, for his great help in preparing this manuscript.

Comparative notes. – *M. wieringi* belongs to the *bicolor* species group and resembles *M. heliophilus* Pulawski, 1968 closely. Mesonotum, scutellum, and metanotum are punctulated in *M. wieringi* and strongly shagreen in *M. heliophilus*. The mesopleuron is closely punctulated in *M. wieringi* and ridged longitudinally in *M. heliophilus*. There is a difference in the place of the ocelli: POL : OOL = 3.2 and SOL : OOL = 4.0 in *M.wieringi* and POL : OOL = 2.4 and SOL : OOL = 3.0 in *M.heliophilus*.

Miscophus eburneus sp. n.
(figs. 10-12)

Type material. – Holotype female: Côte d'Ivoire, 30-35 km N.Korghogo, mal.tr. 39, 28.iv.1980, J. W. Everts (ZMAN). – Paratypes 1♀, same data as holotype; 1♂, Côte d'Ivoire, 30-35 km N.Korghogo, mal.tr. 11, 3.i.1980, J. W. Everts (LUW); 2♀, same data as holotype; 1♂, Côte d'Ivoire, 30-35 km N.Korghogo, mal.tr. 40, 28.iv.1980, J. W. Everts (ZMAN); 1♀, Côte d'Ivoire, 30-35 km N.Korghogo, mal.tr. 35, 17.xii.1979, J. W. Everts, 1♂, Côte d'Ivoire, 30-35 km N.Korghogo, mal.tr. 40, 28.iv.1980, J. W. Everts (RMNH).

Additional specimens. – 1♀, Côte d'Ivoire, Katiola-Savanne, malaise, 20.ii.1981, leg. J. W. Everts c.s., 1♀, Senegal, 25-35 km sud de Richard Toll, piège malaise D3, 27.ix.1989, leg. H. v. d. Valk, 1♀, Niger, Niamey, Centre Aghrymet, piège malaise-mil, 26.viii-1.ix.1988, Y. Jongema, 1♀, Nigeria, savannezone, ii-iii.1975, leg. P. Splithof & H. de Jongh; 1♂, Côte d'Ivoire, 30-35 km N.Korghogo, mal.tr. 34, 28.iv.1980, J. W. Everts (LUW); 1♀, Côte d'Ivoire, 30-35 km N.Korghogo, mal.tr. 2, 28.ii.1980, J. W. Everts, 1♀, Côte d'Ivoire, Katiola, malaise, 20.iv.1980, leg. J. W. Everts, 1♂, Ivory Coast, Koudougou 10 km SE Bouaflé, malaise-trap, 16.ii.1981, J. W. Everts, 1♀, Senegal, 25-35 km sud de Richard Toll, piège malaise G4, 21.viii.1989 H. v. d. Valk, 1♀, Senegal, 25-35 km sud de Richard Toll, piège malaise G4, 30.ix.1989, H. v. d. Valk, 1♀, Senegal, Vélingara, malaise, 15.v.1989 , J. W. Everts, 1♀, Senegal, Ziguinchor, 13.v.1983, J. W. Everts (ZMAN).

Description

Female 5.5 mm. Black; palpi light ferruginous; mandibles ferruginous, apex of mandible and apex of subbasal notch red brown. Scape, pedicel, pronotal lobe, tegula, and apical half of clypeus ferruginous. Legs including coxae ferruginous; spines of all legs dark brown. Sternites I and II, tergites I and II, and lateral side of tergite III ferruginous.

Palpi externally hairy. Clypeus rather low (19 : 5) with shining translucent apical rim (fig. 10). Clypeus and frons just above antennal sockets with scarce silvery pubescence. Head very finely punctulated. Frontal line shining. Inner margins of compound eyes from clypeus up to halfway frons parallel, upper half converging to apex (fig. 10). POL : OOL = 2.0, SOL : OOL = 4.0, VOL : OOL = 2.5. Pedicel somewhat longer than wide, flagellomeres I and II four times as long as wide, flagellomeres III and IV twice as long as wide, flagellomeres V-X one and a half times as long as wide.

Pronotum, mesonotum, scutellum, and metanotum finely punctulated. Propodeum with transversal strigose and midcarina. Mesopleuron strigose. Propodeum equally long and wide at base (16 : 15). Side of propodeum obliquely strigose. Mesopleuron finely and horizontally strigose.

Sternites and tergites shining, very finely punctulated. Tergite VI apically punctulated, without pygidium. Sternite III-VI apically some long hairs.

Forewing somewhat clouded with hyaline band over submarginal cell I and discoidal cell II. Veins light brown and in hyaline band nearly hyaline. First recurrent vein received by submarginal cell I at 0.3 from submarginal cell II. Cu1 and 2m-cu strongly reduced. Hindwing hyaline. In hindwing only medial and submedial cell present. Jugal lobe small with a deep jugal excision.

Coxa I and apical half of coxa II and III ferruginous, basal part of coxa II and III black. Femurs and tibiae I-III for the greater part ferruginous, femurs I and II with an apical, external black spot, tibia III externally black; all tarsi dark brown. All coxae triangle formed, 1.3 as long as wide at the base.

Male 5 mm. Colour largely as in holotype. Clypeus trilobed, with narrow apical rim ferruginous (fig. 11). Scarce silvery pubescence on basal part of clypeus and on frons just above antennal sockets. Tarsi of all legs dark brown. Sternite II with two lateral small round dark brown spots. Tergite VII rounded apically. Sternites III -VII apically two or three outstanding long hairs. Apex of sternite VII straight with a line of short hairs (fig. 12).

Etymology. – From Latin eburneus, meaning made from ivory, so named in reference to the country in which the material was collected (Ivory Coast).

Variations. – The colour of the pronotum varies in different areas. Some females from Ivory Coast have a ferruginous spot at the lateral side of the pronotum. The females of northern Senegal have a complete ferruginous pronotum; all legs including the coxae are completely ferruginous. The females of southern Senegal, Niger, and Nigeria have a black pronotum as in the holotype. In one male from Ivory Coast the dark spots on the second sternite are missing.

Comparative notes. – The new species *M. eburneus* sp. n. is very near to *M. mineticus* Honoré. The anterior edge of the clypeus of *M. eburneus* without discontinuites is even more straight than the clypeus of *M. mineticus*. The legs of *M. eburneus* are mostly ferruginous and black in *M. mineticus*. *M. eburneus* has no cupreous tinge. Propodeum of *M. mineticus* is obliquely ridged with hairs directed forwards, while *M. eburneus* has a transversally ridged propodeum without hairs.

Miscophus pseudochrysis sp. n.
(fig. 13)

Type material. – Holotype female, Senegal, 25-35 km sud de Richard Toll, piège malaise C3, 13.ix.1989, H. v. d. Valk (LUW). – Paratype 1♂, 27.ix.1989, all other data as in holotype (ZMAN).

Description

Female 5 mm. Shining green; mandibles red brown with dark green base; palpi brownish; scape dark brown; pedicel and flagellum black. Tergites II and III green with cupreous tint. Clypeus with dark brown apical rim.

Ventral side of the segments of the palpi with two rows of curved hairs. Clypeus almost straight at apex, rounded towards compound eye, flat between antennal sockets. Clypeus low (20 : 5). Lower half of frons very roughly rugose. Upper half of frons with few large points on punctulated area; vertex very finely and closely punctulated. POL : OOL = 3.5, SOL : OOL = 3.5, VOL : OOL = 2.0. Pedicel a little longer than wide at apex (5 : 4). Flagellomeres I - IV three times as long as wide at apex. Flagellomeres V-VIII twice as long as wide at apex. Flagellomeres IX and X a little longer than wide. Flagellomere X flattened externally.

Pronotum, mesonotum, and scutellum very finely punctulated, the points arranged in waves, only visible when strongly magnified. Sides of pronotum horizontally strigose, pronotal lobe shining with some reclining white hairs. Dorsal part of propodeum, with strong midcarina, finely strigose obliquely in front and almost transversally apically. Propodeum at base wider than long (16 : 12). Sides of propodeum strongly and horizontally strigose. Mesopleuron reticulated. Episternum of mesonotum with short horizontal lines starting at episternal sulcus, rest of episternum punctated.

Tergites very finely punctulated. Sixth tergite apex sharp and brown, no pygidium. Sternite V with two outstanding hairs at apex; sternite VI with some outstanding hairs at apical half.

Wings hyaline with light ferruginous veins. Veins Cu1 and 2m-cu in forewing strongly reduced (fig. 13). Height of second submarginal cell 0.75 of base of the cell.

All tarsi dark brown. Coxa I almost equilaterally triangular and bulging. Metatarse I with two apical spines and one lateral spine in the middle.

Male 4.5 mm. Colour and most characteristics as in holotype. Base of mandible including basal notch black, middle part brown, apex black. Scape with brown ventral spot. Frons with two horizontal carinas just above antennal sockets. Sternites II-VI with a few setae along apex.

Etymology. – The species takes its name from its great resemblance to *M. chrysis* Kohl, 1894.

Comparative notes. – *M. pseudochrysis* resembles very much *M. chrysis* Kohl, 1894, of which only one female was collected; a comparison can only be given for the females. Reticulated part of the frons up to the midocellus in *M. chrysis* and only half way in *M. pseudochrysis*. Episternum of the mesothorax in *M. pseudochrysis* is horizontally strigose and in *M. chrysis* reticulated. Sternum of the mesothorax in *M. pseudochrysis* is finely punctulated and horizontally strigose in *M. chrysis* . The colour of *M. chrysis* is bright green-blue and of *M. pseudochrysis* bright green and the tergites II and III have a cupreous tint.

Miscophus sallitus Andrade, 1960
(fig. 14)

De Beaumont (1956) mentions a new species of *Miscophus* from the Cape Verde Island of Sal. The single male was later described by Andrade (1960) as *M. sallitus*. Three females, collected in 1988 on the island of Sal, were mentioned as belonging to the same species (Simon Thomas & Wiering 1993). A description of a female is given below.

Description

Female 5 mm. Black; apical half of mandibles amber ferruginous, apical internal side of scape light brown; pedicel with light brown apical ring. Vertex, pronotum, mesonotum, metanotum, and tergites with rather marked cupreous tint.

Clypeus arched with shining rim. Lower part of face and clypeus with silver pubescence. Upper frons very finely and closely punctulated. POL : OOL = 1.7, SOL : OOL = 2.3, VOL : OOL = 2.0. Flagellomeres IX and X are missing in all specimens, VII and VIII on external side with shallow furrow. Flagellomeres I-IV three and a half times as long as wide at apex. Flagellomeres V-VII three times as long as wide at apex. Flagellomere VIII twice as long as wide at apex.

Pronotal collar, mesonotum, scutellum, and metanotum finely punctulated. Dorsal central part of propodeum obliquely striated; side of dorsal part of propodeum striation interrupted and sides of propodeum obliquely striated.

Tergites extremely finely punctulated. Sternites with a few long black hairs at apex.

Forewing hyaline, slightly clouded beyond the nervation zone. Veins ending rather far from apex (fig. 14).

Material. – 3♀, Cabo Verde: Sal: Salinas Pedra da Lume, 15.xi.1988, T. & M. Simon Thomas (ZMAN).

Miscophus funebris Honoré, 1944

Material. – 1♀, Niger, Niamey, Centre Agrymet, piège malaise, 8.vi.1989, leg. J. Hollands (LUW), 1♂, same data as female (ZMAN).

This species is new for Niger. Up till now *Miscophus funebris* Honoré was only known from Egypt. In structure the specimens from Egypt and Niger are very much alike. The Niger specimens differ in extension of the ferruginous colour on legs and first two gastral segments from the Egyptian specimen. All gastral segments of the Niger specimens are light ferruginous, whereas the two first gastral segments of the Egyptian specimen are dark ferruginous. The gastral segments from III to the apex of the Egyptian specimen is also ferruginous. The legs of the Niger specimens are ferruginous with an external dark stripe on the tibiae, whereas the Egyptian specimen has dark brown legs.

Only one specimen of Egypt is known (Honoré 1944) and one female and one male from Niger. No specimens have been found in between Egypt and Niger. From these few specimens it is impossible to tell the colour variations are a constant characteristic of the specimens from Egypt and Niger or a variation in both populations.

Comparative notes. – See under *M. rufigaster* sp. n.

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